

by <sup>memory</sup> ~~the~~ <sup>the</sup> ~~heavy~~ press. Indeed nothing strikes the visitor  
more than the great neatness, order, & quickness  
fall the arrangements in a mill.

The Weaving Shed.  
The yarn goes through much more before  
the warp is made ready for the loom. At last,  
one or two hundred spindles of yarn are put on  
the bars of horses - something like a clothes-  
horse. From all these spindles the ends are  
drawn out towards a roller just the breadth  
of the cloth required: round the roller they  
wind, a broad sheet of cloth without the cross-  
threads. These cross threads are put in by the  
loom: the business of the loom is to lift  
every other thread as a darning needle does  
when you are crossing a hole; then, when the thread  
is lifted, to throw the shuttle across with a  
cross thread; then to lower these threads & raise  
the next, & again to throw the shuttle back.  
The cross thread carried by the shuttle is called  
the 'weft' & self-acting arms bring it back and  
forward - the arms of the power loom - which  
must also press each weft thread up close against  
the last. The most amusing <sup>thing</sup> sight in a cloth  
mill is to see the magical shuttle fly to & fro  
from edge to edge of the warp between the raised  
slashed threads without any help at all from  
the weaver. The value of the cloth depends  
however, a good deal upon the weaver whose  
business it is to see that no roughness, knot,  
or other fault spoils the smooth surface. Thus  
for the weavers are considered better work-people  
than the spinners & they earn higher wages.

In the old days, the weaver had to throw the  
shuttle; now, the machine does it all, & the woman  
who attended to the weaving just see that the loom  
has

has plenty of  <sup>yarn</sup> thread, join the  <sup>yarn</sup> thread when it  
 breaks, & stop the  <sup>loom</sup> machine if anything goes  
 wrong. Easy work, you will say if it might be  
 so but it is work which does not allow them  
 to  <sup>look after</sup>  ~~to~~  <sup>for</sup>  ~~a~~ moment. Now the  <sup>loom</sup> loom is  
 their work is another matter too hard for you to  
 <sup>explain</sup> understand. The power loom,  <sup>which is</sup>  ~~the~~  <sup>of the</sup>  ~~loom~~  
 <sup>which</sup> used in worsted factories, was invented  
 by J. Cartwright.

Open, there is not a great deal of difference  
 between the work carried on in the  <sup>worsted</sup>  ~~worsted~~ factories  
 of Bradford,  <sup>next, in</sup>  ~~and~~  <sup>the</sup> cloth factories of Leeds.  
 But now, when the cloth has been woven, when  
 scoured, dried, & dyed, it has to go through  
 some hard treatment which the materials  
 used for ladies' dresses except. In the first  
 place, it must be pulled, or felled; that is, it  
 must go through much beating while in a moist  
 hot state to make the edges of all the fibres catch  
 hold of one another, so that you cannot see the  
 warp & weft thread. but only a thick sully surface.  
 Then follows the teasing which raises up the  
 loose fibres so as to form a sort of pile or nap,  
 which is afterwards cut smooth. Boys & girls  
 who live in the country know to tease burrs very  
 well.  ~~know that from it is to stick them out like~~  
 ~~back of their companions & traction~~  <sup>the teasing is sometimes effected by</sup>  ~~a machine~~  
 But bangles are fastened into a roller which is  
 made to turn round & round over the cloth.

We have not described nearly all the  
 processes which take place in a mill; but enough  
 has been said to give you some idea of the great  
 woollen manufactures of Yorkshire.

The noise in each of the vast rooms is so stunning  
 that you cannot hear yourself speak, especially in the  
 weaving room, which is usually on the ground floor.  
 There

There, ~~posterior~~ <sup>hundreds of</sup> looms, each <sup>much</sup> bigger than a <sup>1871/304234</sup> flat ~~press~~ <sup>table</sup>, are ranged side by side over an immense floor in such a way that one woman can look after two looms. The thing which takes away your breath most of all is the enormous quantity of work which is done in every room of the factory. Who does it all? Not the "hands," men & women, boys & girls; they are, for the most part, "ministers," that is, their business is to see that all goes on right, but it is the iron machines which clean

<sup>P</sup> the wool & comb it, spin it, & weave it. These machines are cunningly contrived, each one to do its work; if you can but keep it in motion each machine will go on doing the same thing in the same way, for ever, or until it is worn out. The thing is, how are the machines to be kept moving: this is work too hard for men, too hard for horses; for as <sup>a single</sup> ~~a single~~ machine often does the work of hundreds of men, it would require the strength of hundreds of men to keep it in motion.

Let us go into a single room - the spinning room of the factory. ~~soon~~ <sup>we</sup> discover how the machines are kept at work: thousands of spindles are whirling round in a "fiddy vally"; that is to say, the work of thousands of persons appears to be going on of its own accord. A heavy iron shaft, rising through the floor & piercing through the ceiling, turns, just before it sets upwards, but one cogged wheel & this quickens & lifts 100,000 spindles so the last & least of its effects. A bright iron shaft traverses the middle of the ceiling, & each is joined to this shaft near each frame, & thus the frame is kept at work. It is a sort of horse that Jack Bull! the moving of the lathe keeps the machine



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in motion; the moving of the shaft along the ceiling keeps the tackle in motion; the cog-wheel works upon that, & the shaft which comes up from the floor turns the wheel. You see the same sort of thing in each of the rooms, - a great shaft working up & down, going through floor & ceiling, & turning a wheel, which moves a shaft, which moves the tackle, which moves all the parts of the thousand machines.

But we have not yet got to the root of the matter; what sets the great shaft in motion? In a remote part of the factory, in a house all to himself, lives the giant who really does the work - a fellow with the strength of <sup>five</sup> ~~ten~~ <sup>six</sup> hundred horses. And with power, as we have seen, to work in many places at the same time. Steam is his name; there is the great steam engine in the boiler of which this mighty workman is born. A giant is the engine itself, with enormous wheels, & cranks, & the great shaft which, set in motion, gives motion to all the other shafts in the building. Everything about this monster is kept bright & clean as beautiful as may be, for the engineer usually takes much pride in his engine.

A great deal of the work of the mills is done by little hands: for some of the frames, boys & girls make as good 'minders' as men & women, & as they work for less wages, the mill-owners are willing to employ them. It would need be, however, for English boys & girls to grow up without any schooling, & the law compels these young 'hands' to be sent to school for half the day.

# The Clothing Towns. - Leeds.

The valley of the Aire & that of the Calder, with the district that lies between them, form the great 'clothing' or cloth-making district of the West-riding. Follow the Aire up towards its source from Leeds to beyond Keighley, follow the Calder up from Wakefield & beyond Halifax, & you find the valleys bristling with mill chimneys, either crowded together in great towns, or scattered amongst villages where the mill hands live. Wherever a stream falls into the Aire or the Calder, then you will find a nest of mills & many cottages for the 'hands'. No less than nine small streams join the Calder, & in every one of these valleys is a mill town or a mill village. The land that lies between the Aire & the Calder, too - Bradford & its neighbourhood - is <sup>very thickly</sup> sprinkled with mills.

Let me enquire why the mills should stand so thick in the valleys of the streams & rivers? Look at the water & you will see: the stream that comes down from the hills so clear & bright that you could see the pebbles in their beds leave the mill-towns dark & thick & black, as ink, sometimes. You will generally find that the woollen manufacture is carried on in pretty picturesque spots where there are hills & dales & running streams, because a great deal of water is used in cleansing the wool & in pressing & drying the cloth. There is another great 'clothing' district in Wiltshire - with another Bradford, the way - & this, too, is in a lovely spot, where there are hills & dales & the rivers & the rivers.

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And into tributaries of the through pretty valleys  
where the <sup>little</sup> mills <sup>are</sup>. But the clothing valleys of  
Wiltshire are greener & cleaner than those of Yorkshire  
because all the work of the mills is not done by steam,  
therefore there is not so much smoke rolling  
out of tall chimneys to blacken the trees & green  
the buildings, & the very air. The clothing looms  
of the West-riding are kept so busy that  
all their work could not be done without the  
aid of steam, so we must not mind even  
the smoke which tells us that many men &  
women are doing work & earning wages.

But where does the coal come from to feed the  
countless steam engines at work in the  
valleys? Here is another reason why, out of the  
whole of Yorkshire, this should be the spot where  
the great-woollen manufacture should have  
grown up. Stretching up into South Yorkshire  
out of Nottinghamshire, and reaching as far north  
as Leeds & Bradford, is a great coal field:  
many collieries are at work in this part of  
Yorkshire, <sup>from which</sup> ~~but~~ it is very easy bearing coal  
to the mills.

Then again, out of this very coal field, a great  
deal of iron is obtained. ~~Is iron of any use~~  
~~in the woollen manufacture? Not until~~  
~~you have been over a mill, standing over the~~  
thousands of huge iron machines, & the engines,  
~~then~~ you will understand that it must  
be a <sup>very</sup> ~~good~~ thing to have iron & steel at hand.  
for use in the mills. But woollens were  
made in Yorkshire before ever the steam engine  
was "born or thought of," just because there are  
so many running streams for the use of the clean-  
ing.



and dyers. Night. slept at the great ports of Liverpool & Hull, which send away the woollen goods & receive new wool; & then on canals & railways & carrying the goods between all the clothing towns & other ports.

Leeds, Bradford, Halifax, Huddersfield, Dewsbury, & Keighley are the chief clothing towns in the valleys of the Aire & Calder; ~~and~~ but besides these there are an immense number of villages & smaller towns scattered so thickly in this busy district that the whole appears like one vast 'wool city'.

### Leeds.

Of this cluster of busy towns, Leeds is the largest; indeed, only four towns in the kingdom exceed it in size & importance. It is a rich, busy town; & as might be expected, its most interesting sights are the great manufactories where every kind of woollen cloth is made. In mills, where thousands of hands are employed, as for the most part, fastened round the river Aire which flows through the town; & an astonishing sight it is when all the mill-people pour out to their dwellings at noon, with much clatter, both of tongues & of cloaks. At night when the mills are lighted up & the light streams from countless windows rising row above row, you might think this quarter of Leeds was illuminated in honor of some great event.

Of course there are a great many streets of small houses where the working-people live; but besides these there are broad streets of fine shops & rows of very handsome warehouses where the cloth goods are stored as well as some fine churches & public buildings. <sup>notably a town hall</sup> of which the Leeds people have every right to be proud.

Leeds

Though Leeds is the greatest cloth market of the world, the weaving, dyeing, & selling of cloths as by no means its only industries. Here are, for instance, great iron factories & foundries such as the Wellington & the Airedale Foundries, where you may see moulded, bit by bit - the great engines & machines used in the mills.

There, more linen is made in Leeds than in any other town in the United Kingdom excepting Belfast. The great flax mills, where more than two thousand people are employed, are at Holbeck, on the Aire, & extend of Leeds, & belong to the Messrs. Marshall. These are indeed, amongst the largest flax mills in Europe, the buildings forming a little town in themselves. There are two mills, the older of which is like most other factories, but the new one is very remarkable. Instead of towering up, story above story, like other mills, it is just one enormous room, one of the largest in the world, and as airy, well lighted, & pleasant as science & art can make it. Here maybe seen in order the carding, the spinning, the weaving, all the operations which the flax must go through before it is turned out - a little cloth, huckaback towels, & shirtings; & truly astonishing it is to go through this vast room amidst the shirr of the countless machines & see how wonderfully each frame does its own proper work, how quiet & intent on their business are the work-people, chiefly women & girls, & how, notwithstanding the seeming confusion caused by the moving of the threads & the whirling of the wheels, all is really most orderly, neat & clean. More of the flax used in these great mills is

imported from

France, Belgium



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Belgium & Holland. All the arrangements for the work people are very complete & considerable, including a church, good schools & a capital library provided by their employers. On the roof of this admirable mill is - a waving field of green grass!

Barnsley in South Yorkshire, 'Black Ramble' as it is sometimes unkindly called, is also a busy linen-making place, noted for its damasks, sheetings, &c.

We have not space even to mention all the manufactures of Leeds, its leather works & glass works, its cap factories & shoe factories, its brass works & gun-shops. But you may imagine from what has been said that a very busy town it is; & what thousands of work people leave the clanging of hammers & the whirr of machinery to spend a happy Saturday afternoon on Woodhouse Grove, or at Roundhay, one of the prettiest & pleasantest public parks in England. On the Sunday, very many of the Leeds work people are to be found in Sunday school, chapel & church; & as Yorkshire people love singing & have fine voices, the Sunday with its teaching & services going brings fully as much pleasure as the Saturday half-holiday.

We have no room to describe the large & handsome town hall, nor the cloth Halls, libraries, or other fine public buildings; nor to say anything of the excellent shops, the war-houses, & the stirring life of

Ringside

Brigat & Wellington Street, the two principal streets  
 of the town. But we must not just add that Leeds  
 is no upstart town, but has a history of its own  
 reaching back as far nearly as English  
 history goes. In early Saxon days there was a  
 little kingdom of "Loidis" or Leeds which took in  
 the valley of the Aire, Calder & Wharfe, & was at one  
 time ruled by a king Cordio. Since that  
 time, the town has had various fortunes. When  
 the Conquerors marched into Yorkshire against  
 the north-country folk for their herby resistance,  
 he left Leeds a waste. After that, we read of  
 a castle here, in which the unhappy king Richard  
 was kept a prisoner for a short time, but with  
 the least trace of this castle remains. The  
 great manufacture for which Leeds is famous  
 to-day probably began in the homesteads of the  
 valley as far back as the reign of Edward III, who  
 settled some Flemish weavers in the neighbouring  
 town of Halifax. And since that time, with industry  
 persevering & steady as the Yorkshire people, the  
 trade has gone on increasing, until Leeds is now  
 a great town with over 200,000 inhabitants.

### The Coal-Field.

We have said that the busy manufacturing towns  
 of the West-Riding are so prosperous because they  
 stand on a great coal-field - a well-stocked  
 coal-cellar underground where coal is laid up to  
 work the great steam-engines which <sup>perform the labour</sup> ~~do all the work~~ of  
 the mills. But what is a coal-field? The word "field"  
 makes you think <sup>one</sup> of pleasant green meadows,  
 but